HOW TO

IDENTIFY AND CONTROL LEAF SPOT

DISEASES OF BLACK WALNUT

North Central Forest Experiment Station
Forest Service
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St. Paul, Minnesota

Growing black walnut in pure stands is becoming more and more common. Although this practice has definite economic advantages, it can aggravate disease problems. This is especially true of leaf spot diseases, which multiply rapidly where large numbers of susceptible leaves are concentrated in a small area.

Three such diseases are especially common on black walnut: walnut anthracnose, bull's-eye leaf spot, and white mold. All are becoming more prevalent as more walnut plantations are established. The symptoms produced by each of the three diseases are distinct and the grower can easily learn to tell them apart.

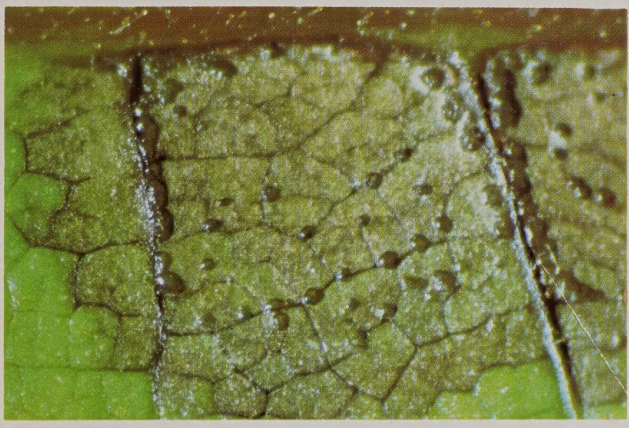
WALNUT ANTHRACNOSE
Gnomonia leptostyla

Found wherever walnut is grown, walnut anthracnose causes premature loss of leaves, usually resulting in reduced growth and increased susceptibility to other diseases. Anthracnose also occurs on nuts, causing the nutmeats to shrivel and darken.

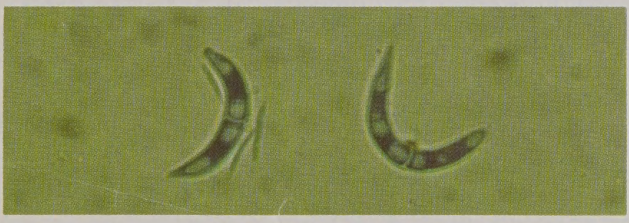
Look for:

- **Dark angular spots on the leaves ranging from pin-prick size to 1/2 inch (12 mm) in diameter.**

- Very small black bumps (acervuli) within the spots, especially on the underside of the leaf near veins. You can easily see them through a hand-held magnifying lens. Acervuli are the fruiting bodies of the fungus;



they contain many crescent-shaped, bicellular spores (conidia: 20 × 3 u), which are responsible for the spread of the disease.



- Prematurely defoliated trees. Examine some fallen leaflets. The presence of numerous spots with acervuli on the leaflets is a clue that anthracnose was the primary cause of the defoliation.

Control:
Trees not severely defoliated every year are not sufficiently harmed by the disease to warrant control measures. However, should control be required, spray benomyl or dodine fungicide on the foliage. (Benomyl is not registered for use on walnut trees grown for nut production.) Proper maintenance of soil fertility, especially with applications of nitrogen fertilizers, will also help minimize the damage.

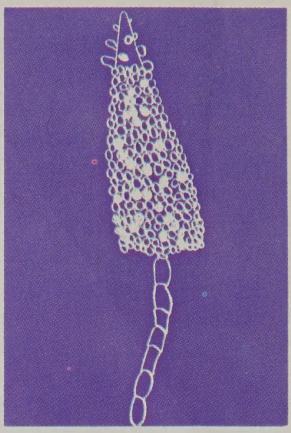
BULL'S-EYE LEAF SPOT
Cristulariella pyramidalis

Bull's-eye leaf spot, like anthracnose, causes premature defoliation of black walnut trees. The range of bull's-eye leaf spot is not known. Recently, however, severe outbreaks of the disease have occurred in southern Illinois and Ohio, defoliating entire stands of walnut trees. *Cristulariella* also attacks maple, hickory, and many common weeds.

Look for:

- **Dark, round, dead or dying areas with concentric white rings on leaves. These spots are more rounded than anthracnose spots and the rings give them a target-like appearance.**

- **The white Christmas treelike fruiting body of the fungus (approximately 350 × 100 u) on the underside of the leaf. No other pathogen of walnut produces a fruiting body resembling *Cristulariella.***



- **Target-shaped spots on newly fallen leaflets, and for the Christmas treelike sporophore. An abundance of these prove bull's-eye leaf spot to be the cause of defoliation.**

Control:
No means of controlling *Cristulariella* has yet been developed. Fertilization with nitrogen should help minimize the harmful effects of the disease. Also weed control in and around the planting may help reduce early-season infection.

MICROSTROMA WHITE MOLD
Microstroma juglandis

White mold, or downy leaf spot, is common wherever walnut is grown. The disease is more unsightly than damaging. *Microstroma* does not kill the leaf, nor is it known to cause defoliation. Any harm to the walnut is probably secondary due to the shading of a portion of the leaf surface and hence a decrease in photosynthesis.

Look for:
- **A whitish growth on the underside of the leaf, often concentrated along the veins, and for a yellowish discoloration on the top surface of the leaf.**

Control:
No control is recommended.

Leaf diseases do not cause all defoliation of black walnut trees. Insects (e.g., the walnut caterpillar) and drought can also be the culprits. The fallen leaflets may show black specks or flecks but seldom spots typical of the three diseases described.

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